

CLAIMS

What is claimed is:

1. A turbofan with a drive motor comprising:
 - a rotating plate having a front face coupled at a center thereof to a shaft of the drive motor;
 - a plurality of blades radially arranged on a peripheral area of the front face of the rotating plate;
 - a ring-shaped shroud joining to ends of the plurality of blades; and
 - a flow guide rib extending from a peripheral edge of the rotating plate in a rearward direction to guide air discharged from the turbofan.

2. An air conditioner, comprising:
 - a drive motor; and
 - a turbofan, comprising:
 - a rotating plate having a front face coupled at a center thereof to a shaft of the drive motor,
 - a plurality of blades radially arranged on a peripheral area of the front face of the rotating plate,
 - a ring-shaped shroud joining to ends of the plurality of blades, and
 - a flow guide rib extending from a peripheral edge of the rotating plate in a rearward direction to guide air discharged from the turbofan.

3. A turbofan with a drive motor comprising:
 - a rotating plate having a front face coupled at a center thereof to a shaft of the drive motor;

a plurality of blades radially arranged on a peripheral area of the front face of the rotating plate;
a ring-shaped shroud joining to ends of the plurality of blades; and
a flow guide rib extending from a peripheral edge of the rotating plate in rearward and outward directions to guide air discharged from the turbofan.

4. An air conditioner, comprising:
a drive motor; and
a turbofan, comprising:
a rotating plate having a front face coupled at a center thereof to a shaft of the drive motor,
a plurality of blades radially arranged on a peripheral area of the front face of the rotating plate,
a ring-shaped shroud joining to ends of the plurality of blades, and
a flow guide rib extending from a peripheral edge of the rotating plate in rearward and outward directions to guide the air discharged from the turbofan.

5. An air conditioner comprising:
a case body;
a drive motor fixed to an inner surface of the case body;
a turbofan coupled to a shaft of the drive motor, and including a rotating plate coupled at a center thereof to the shaft of the drive motor, a plurality of blades radially arranged on a peripheral area of a front face of the rotating plate, a ring-shaped shroud joining to ends of the plurality of blades, and a flow guide rib extending in a rearward direction from a peripheral edge of the rotating plate toward an inner surface of the

case body to guide air discharged from the turbofan; and

a heat exchanger disposed around the turbofan in the case body.

6. An air conditioner comprising:

a case body;

a drive motor fixed to an inner surface of the case body;

a turbofan coupled to a shaft of the drive motor, and including a rotating plate coupled at a center thereof to the shaft of the drive motor, a plurality of blades radially arranged on a peripheral area of a front face of the rotating plate, a ring-shaped shroud joining to ends of the plurality of blades, and a flow guide rib extending from a peripheral edge of the rotating plate in rearward and outward directions to guide air discharged from the turbofan; and

a heat exchanger disposed around the turbofan in the case body.

7. A turbofan with a drive motor comprising:

a rotating plate coupled to the drive motor to rotate the rotating plate;

a plurality of blades radially arranged on a front face of the rotating plate;

a shroud joining to ends of the plurality of blades; and

a flow guide rib extending from a peripheral edge of the rotating plate in one of an axial direction and of axial and radial directions to guide air discharged from the turbofan.

8. The turbofan according to claim 7, wherein the air discharged from the turbofan is discharged therefrom in a specific direction by the flow guide rib to suppress a turbulent air flow of the air

discharged from the turbofan.

9. The turbofan according to claim 7, further comprising:

a central hub into which a shaft of the drive motor fits, the rotating plate integrally formed with the central hub, the shroud being joined to the ends of the plurality of blades with a spacing between the rotating plate and the shroud so as to support the ends of the plurality of blades.

10. The air conditioner according to claim 7, wherein the flow guide rib of the turbofan is bent at the peripheral edge of the rotating plate of the turbofan to be inclined at a predetermined angle with respect to an axis of the turbofan.

11. The air conditioner according to claim 7, wherein the rotating plate of the turbofan is formed at a center area with a plurality of circulation holes to allow air to be circulated therethrough to cool the drive motor.

12. An air conditioner, comprising:

a drive motor; and

a turbofan, comprising:

a rotating plate coupled to the drive motor to rotate the rotating plate;

a plurality of blades radially arranged on a front face of the rotating plate;

a shroud joining to ends of the plurality of blades; and

a flow guide rib extending from a peripheral edge of the rotating plate in one of a rearward direction

and of an axial direction and a radial direction to guide air discharged from the turbofan.

13. An air conditioner comprising:

a case body to attach to surface member;

a drive motor fixed to the case body;

a turbofan coupled the drive motor to drive the turbofan, and comprising:

a rotating plate to rotate in the turbofan,

a plurality of blades radially arranged on a peripheral area of the rotating plate,

a shroud joining to ends of the plurality of blades, and

a flow guide rib extending from a peripheral edge of the rotating plate in one of an axial direction

and of an axial direction and a radial direction to guide air discharged from the turbofan; and

a heat exchanger disposed around the turbofan in the case body.

14. The air conditioner according to claim 13, wherein the air discharged from the turbofan is discharged therefrom in a specific direction by the flow guide rib to suppress a turbulent air flow of the air discharged from the turbofan.

15. The air conditioner according to claim 13, wherein the case body further comprises a flange disposed at the lower face of the case body to be attached to a peripheral edge of a mounting surface.

16. The air conditioner according to claim 13, wherein the heat exchanger is rectangular and

tube-shaped to surround the turbofan and to exchange heat with the air discharged from the turbofan.

17. The air conditioner according to claim 13, further comprising:

a tray provided under the heat exchanger, to collect condensation resulting from heat exchange and to discharge the condensation.

18. The air conditioner according to claim 13, further comprising:

a panel comprising

an inlet provided at a center thereof to allow the air to be drawn through the inlet, and

a plurality of elongated outlets provided around the inlet;

a filter provided in the inlet of the panel to clean the air being drawn through the inlet; and

a guide plate having a central opening provided adjacent to the filter to guide the air drawn through the filter toward a center of the turbofan.

19. The air conditioner according to claim 13, wherein:

the drive motor comprises:

a shaft to drive the turbofan; and

the turbofan further comprises:

a central hub into which the shaft of the drive motor fits, the rotating plate integrally formed with the central hub, the shroud being joined to the ends of the plurality of blades with a spacing between the rotating plate and the shroud so as to support the ends of the plurality of blades.

20. The air conditioner according to claim 13, wherein a rear surface of the rotating plate of the turbofan is spaced apart from the inner surface of the case body by a predetermined gap such that an outlet of the turbofan is positioned at a middle portion of the heat exchanger to distribute the air discharged from the turbofan over an entire area of the heat exchanger.

21. The air conditioner according to claim 13, wherein the flow guide rib of the turbofan is bent in one of a rearward direction and of rearward and outward directions at a peripheral portion of the rotating plate, toward the inner surface of the case body.

22. The air conditioner according to claim 13, wherein the flow guide restricts air entering a flow path defined between a rear surface of the turbofan and an inner surface of the case body while allowing a portion of the air discharged by the turbofan to enter the flow path to cool the drive motor.

23. The air conditioner according to claim 13, wherein the rotating plate of the turbofan is formed at a center area with a plurality of circulation holes to allow air to be circulated therethrough to cool the drive motor.

24. The air conditioner according to claim 22, wherein a majority of the air discharged is guided toward the heat exchanger by the flow guide rib and away from the flow path defined between the rear surface of the turbofan and the inner surface of the case body so that substantially no turbulent air flow occurs near an outlet of the turbofan.

25. The air conditioner according to claim 13, wherein the flow guide rib formed at the peripheral edge of the rotating plate of the turbofan is inclined at a predetermined angle with respect to an axis of the turbofan.